

Listing of Claims:

1. (Previously Presented) A method of controlling a data unit sender, having a send buffer for storing data units to be sent, arranged to operate in accordance with a communication protocol that provides for a feedback function, wherein a sender in a data unit communication receives feedback messages from a receiver that reports on the receipt of data units, said method comprising:

controlling the flow of data sent by said data unit sender, such that at any given moment the amount of previously unsent data that the sender can send at once is limited by an available transmission capacity value,

detecting a time-out monitoring procedure triggering event,

utilizing a time-out monitoring procedure for monitoring whether a feedback message for a designated data unit arrives before a predetermined time-out period (S-RTO) has expired, said predetermined time-out period (S-RTO) starting at the occurrence of the time-out monitoring procedure triggering event, and for retransmitting the designated data unit if said predetermined time-out period (S-RTO) expires without said acknowledgment message having arrived, wherein said predetermined time-out period (S-RTO) is a first time-out period, and

utilizing said time-out monitoring procedure to perform a retransmission of said designated data unit upon expiration of a second time-out period (Q-RTO) shorter than said first time-out period, if upon the expiration of said second time-out period (Q-RTO) said available transmission capacity value for unsent data is greater or equal to the size of said designated data unit.

2. (Previously Presented) The method according to claim 1, wherein said designated data unit is only retransmitted upon expiration of said second time-out period (Q-RTO) if the amount of unsent data in said send buffer is smaller than or equal to a threshold value.

3. (Previously Presented) The method according to claim 1, wherein said time-out monitoring procedure is arranged to perform a congestion control procedure

subsequent to the expiration of said second time-out period (Q-RTO), said congestion control procedure comprising an adjustment procedure for adjusting one or more parameters used by said flow control procedure such that the amount of previously unsent data that the sender is allowed to send at once is reduced.

4. (Previously Presented) The method according to claim 3, wherein said congestion control procedure is arranged to perform said adjustment procedure upon expiration of said second time-out period (Q-RTO).

5. (Previously Presented) The method according to claim 3, wherein said congestion control procedure is arranged to delay performing said adjustment procedure, and to perform an intermediate monitoring procedure during an intermediate period between the expiration of said second time-out value (Q-RTO) and said first time-out value (S-RTO), said intermediate monitoring procedure being arranged to detect whether a feedback message relating to said designated data unit arrives within said intermediate period, and said adjustment procedure being arranged to respond to the outcome of said intermediate monitoring procedure to perform a first adjustment of said one or more parameters if no feedback message relating to said designated data unit arrives within said intermediate period, and to perform a second adjustment of said one or more parameters if a feedback message relating to said designated data unit arrives within said intermediate period, said first adjustment being different from said second adjustment.

6. (Previously Presented) The method according to claim 5, wherein said intermediate monitoring procedure is arranged to be able to distinguish whether a received feedback message relating to said designated data unit relates to the retransmission of said designated data unit performed upon expiration of said second time-out value (Q-RTO) or to a prior transmission of said designated data unit, and said adjustment procedure being arranged to leave said one or more parameters unchanged

if said received feedback message relates to a prior transmission of said designated data unit.

7. (Previously Presented) The method according to claim 1, wherein said flow control procedure is window based and arranged to determine said available transmission capacity value on the basis of the difference between a send window and an amount of outstanding data.

8. (Previously Presented) The method according to claim 1, wherein said flow control procedure is rate based and arranged to determine said available transmission capacity value on the basis of an allowable transmit rate.

9. (Previously Presented) The method according to claim 1, comprising a procedure for measuring a feedback response time (RTT), said feedback response time being indicative of the time that passes between the sending of a data unit and the receipt of a feedback message relating to said feedback message, wherein said second time-out value (Q-RTO) is determined in dependence on one or more measured feedback response time values.

10. (Previously Presented) The method according to claim 9, wherein said first time-out value (S-RTO) is also determined in dependence on one or more measured feedback response time values.

11. (Previously Presented) The method according to claim 1, wherein said second time-out value (Q-RTO) is larger than or equal to a fraction of the first time-out value.

12. (Previously Presented) The method according to claim 1, wherein said data unit sender is arranged to operate in accordance with the Transmission Control

Protocol TCP, and said first time-out value is the standard TCP Retransmission Time-Out parameter RTO.

13. (Previously Presented) A data unit sender arranged to operate in accordance with a communication protocol that provides for a feedback function according to which a sender in a data unit communication receives feedback messages that report on the receipt of data units, comprising:

- a send buffer for storing data units to be sent,

- a flow controller for controlling the flow of data sent by said data unit sender, said flow controller implementing a flow control procedure arranged such that at any given moment the amount of previously unsent data that the sender can send at once is limited by an available transmission capacity value,

- a detector for detecting a time-out monitoring procedure triggering event,

- a time-out monitor for monitoring whether a feedback message for a designated data unit arrives before a predetermined time-out period (S-RTO) has expired, said predetermined time-out period (S-RTO) starting at the occurrence of the time-out monitoring procedure triggering event, and for retransmitting the designated data unit if said predetermined time-out period (S-RTO) expires without said acknowledgment message having arrived, wherein said predetermined time-out period (S-RTO) is a first time-out period, and

said time-out monitor is arranged to perform a retransmission of said designated data unit upon expiration of a second time-out period (Q-RTO) shorter than said first time-out period, if upon the expiration of said second time-out period (Q-RTO) said available transmission capacity value for unsent data is greater or equal to the size of said designated data unit.

14. (Previously Presented) The data unit sender according to claim 13, wherein time-out monitor is arranged such that said designated data unit is only retransmitted upon expiration of said second time-out period (Q-RTO) if the amount of unsent data in said send buffer is smaller than or equal to a threshold value.

15. (Previously Presented) The data unit sender according to claim 13, wherein said time-out monitor is furthermore arranged to perform a congestion control procedure subsequent to the expiration of said second time-out period (Q-RTO), said congestion control procedure comprising an adjustment procedure for adjusting one or more parameters used by said flow control procedure such that the amount of previously unsent data that the sender is allowed to send at once is reduced.

16. (Previously Presented) The data unit sender according to claim 15, wherein said congestion control procedure is arranged to perform said adjustment procedure upon expiration of said second time-out period (Q-RTO).

17. (Previously Presented) The data unit sender according to claim 15, wherein said congestion control procedure is arranged to delay performing said adjustment procedure, and to perform an intermediate monitoring procedure during an intermediate period between the expiration of said second time-out value (Q-RTO) and said first time-out value, said intermediate monitoring procedure being arranged to detect whether a feedback message relating to said designated data unit arrives within said intermediate period, and

said adjustment procedure being arranged to respond to the outcome of said intermediate monitoring procedure to perform a first adjustment of said one or more parameters if no feedback message relating to said designated data unit arrives within said intermediate period, and to perform a second adjustment of said one or more parameters if a feedback message relating to said designated data unit arrives within said intermediate period, said first adjustment being different from said second adjustment.

18. (Previously Presented) The data unit sender according to claim 17, wherein said intermediate monitoring procedure is arranged to be able to distinguish whether a received feedback message relating to said designated data unit relates to

the retransmission of said designated data unit performed upon expiration of said second time-out value (Q-RTO) or to a prior transmission of said designated data unit, and said adjustment procedure being arranged to leave said one or more parameters unchanged if said received feedback message relates to a prior transmission of said designated data unit.

19. (Previously Presented) The data unit sender according claim 13, wherein said flow control procedure is window based and arranged to determine said available transmission capacity value on the basis of the difference between a send window and an amount of outstanding data.

20. (Previously Presented) The data unit sender according claim 13, wherein said flow control procedure is flow rate based and arranged to determine said available transmission capacity value on the basis of an allowable transmit rate.

21. (Previously Presented) The data unit sender according claim 13, comprising an element for measuring a feedback response time (RTT), said feedback, response time being indicative of the time that passes between the sending of a data unit and the receipt of a feedback message relating to said feedback message, wherein said data unit sender is arranged to determine said second time-out value (Q-RTO) in dependence on one or more measured feedback response time values.

22. (Previously Presented) The data unit sender according claim 13, wherein said data unit sender is arranged to also determine said first time-out value in dependence on one or more measured feedback response time values.

23. (Previously Presented) The data unit sender according claim 13, wherein said second time-out value (Q-RTO) is larger than or equal to one half of the first time-out value.

24. (Previously Presented) The data unit sender according claim 13, wherein said data unit sender is arranged to operate in accordance with the Transmission Control Protocol TCP, and said first time-out value (S-RTO) is the standard TCP Retransmission Time-Out parameter RTO.

25 -26. (Canceled)